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LISTS OF SPECIES

Anura, Estação Ecológica de Jataí, São Paulo state, southeastern Brazil

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Abstract
The *Estação Ecológica de Jataí* comprises one of the largest mesophytic semideciduous forest and savanna remnants in the state of São Paulo. However, anuran surveys on this site have not been registered in the literature. As result of an exploratory survey conducted in water bodies in the mesophytic semideciduous forest and surroundings in December 2006, we recorded 21 anuran species belonging to five families and 10 genera. These findings contribute to the knowledge of the anuran fauna associated to the mesophytic semideciduous forest of São Paulo state, Brazil.

Introduction
Currently, ca 5,700 anuran species are known worldwide (Frost 2009), most of them found in neotropical regions (Duellman 1988). Brazil holds the highest anuran richness in the world (IUCN 2008), with 821 species (SBH 2009) or 14 % of the world anuran diversity. In the state of São Paulo, ca 250 anuran species have been registered (Rossa-Feres et al. 2008), corresponding to 30 % of the Brazilian species and 4 % of the world anuran richness. However, even in well studied regions such as this state (e.g., Cardoso et al. 1989; Heyer et al. 1990; Haddad and Sazima 1992; Pombal and Gordo 2004; Vasconcelos and Rossa-Feres 2005), anuran surveys are still necessary because previous studies were mainly conducted on the coastal range only (Haddad 1998). The *Estação Ecológica de Jataí* illustrates this situation. Although this preservation area comprises one of the largest remnants of mesophytic semideciduous forests and savannas in the state, local surveys on anurans have never been registered in the literature. Our contribution the knowledge of anurans in this forest formation consists of a list of species found at the *Estação Ecológica de Jataí*, municipality of Luiz Antônio, state of São Paulo, Brazil.

Materials and Methods

Study site
The *Estação Ecológica de Jataí* (EEJ) (Figure 1) comprises 9,074.63 ha protected by the state government, and belongs to the Office of Water Resources Management (*Unidade de Gerenciamento de Recursos Hídricos*, UGRHI) of the Mogi-Guaçu River Basin. The area is located in the municipality of Luiz Antônio, state of São Paulo, Brazil, between parallels 21°30' S and 21°40' S, and 47°40' W and 47°50' W (Pires et al. 2000). The *Estação* has a wide diversity of habitats (Figure 2), including (1) native vegetation consisting of the dry mesophytic semideciduous forest and the savanna (Kronka et al. 2005); (2) exotic vegetation of remnants of *Eucalyptus* sp. and *Pinus* sp. cultivars; and (3) aquatic habitats, represented by the Mogi-Guaçu River and its marginal ponds, streams, and regularly flooded lands. The climate is Köpen AW type (tropical with wet summers and dry winters) (Cavalheiro et al. 1990). The total annual rainfall of 1,433 mm is concentrated between November and April. The mean annual temperature is 21.7 ºC (Cavalheiro et al. 1990).

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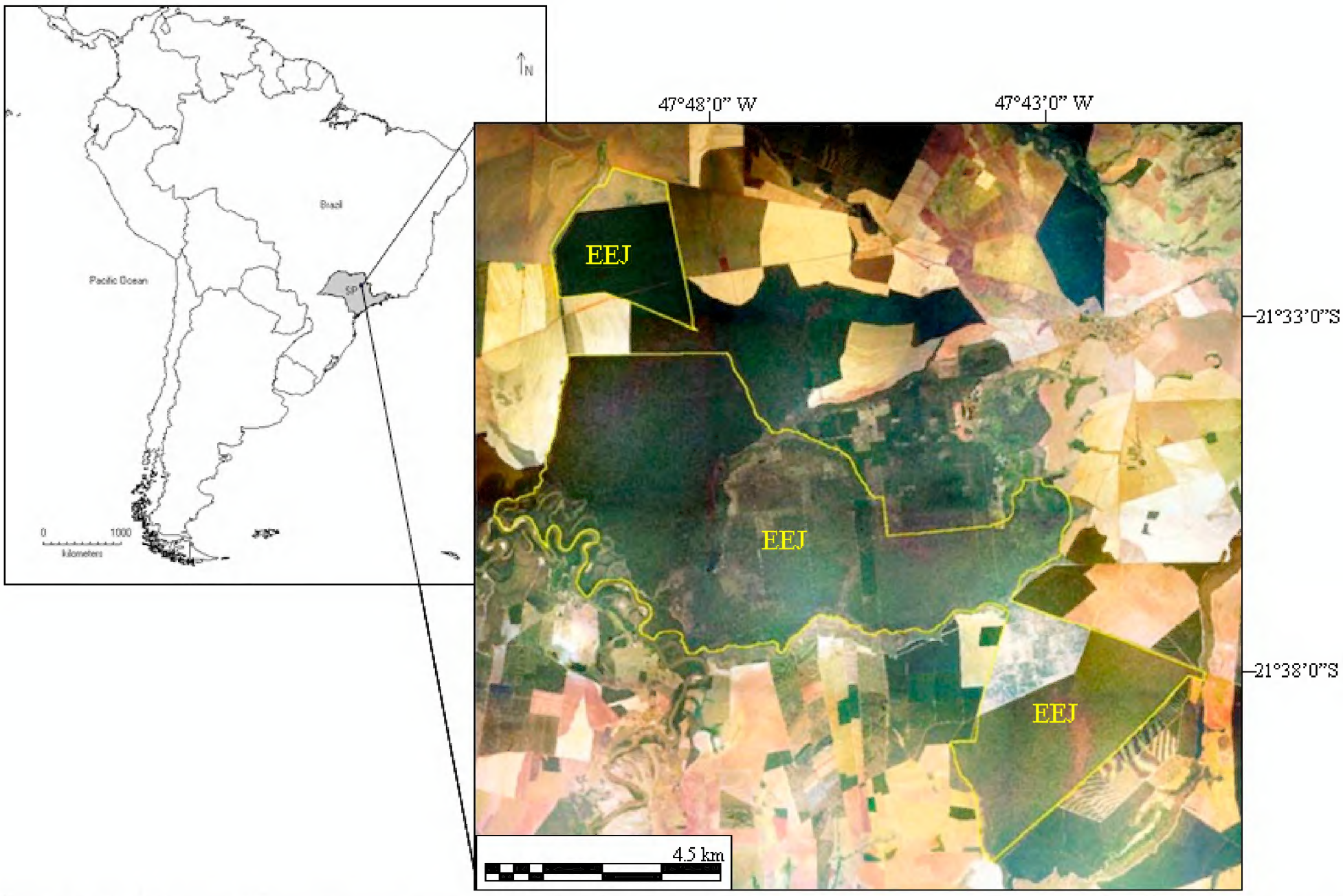

Figure 1. Map of Brazil showing state of São Paulo (SP, in gray) and the study area. In detail, an aerial photography of the *Estação Ecológica de Jataí* (EEJ), adapted from R. H. Toppa (unpublished data). Yellow line delimits the EEJ.

Data Collection

Surveys were conducted at the *Estação Ecológica de Jataí* from December 1 to December 4 2006, while the management plan for the area was developed. We sampled only the breeding sites, and combined audio and visual surveys of the different types of water bodies inside and near the mesophytic semideciduous forest. The types and numbers of samples were collected as follows: dams (2), marginal ponds of the Mogi-Guaçu River (3), temporary (1) and permanent ponds (2), streams up to 2 m in width (7), and wetland (1). All water bodies were surveyed one or two times between 7 and 12 pm. The specimens were identified on the field according to their morphology and vocalization, and then released; the nomenclature used has been proposed by recent reviews on anuran systematic (Faivovich et al. 2005; Frost et al. 2006; Grant et al. 2006; Hedges et al. 2008).

Results and Discussion

Twenty-one anurans belonging to five families were found and registered at the *Estação Ecológica de Jataí* (Table 1, Figures 3 and 4): Hylidae was the richest family (nine species), followed by Leptodactylidae (five species), Leiuperidae (three species), Bufonidae and Microhylidae (two species each) (Table 1). Only males of *Rhinella schneideri* (Werner, 1894) were not observed vocalizing.

Most of species found are typical of open areas or are generalists in regards to habitat use (sensu Duellman 1999), and can be widely distributed (Table 1). None of these species appear as threatened (Haddad 2008; IUCN 2008), but two of their aspects deserve attention: (1) some of these species have taxonomic problems, and those with wide geographical distribution such as *Dendropsophus minutus* (Hawkins et al. 2007) and

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Leptodactylus fuscus (Wynn and Heyer 2001; Camargo et al. 2006) can be considered species complexes. Furthermore, the specific status of *Elachistocleis* sp. is also uncertain. Lavilla et al. (2003) reports that of all the six species belonging to genus *Elachistocleis*, only *E. erythrogaster* Kwet and Di-Bernardo, 1998; *E. piauiensis* Caramaschi and Jim, 1983; and *E. skotogaster* Lavilla, Vaira, and Ferrari, 2003, are well defined but do not occur in the state of São Paulo. In addition, *E. bicolor* (Guérin-Méneville, 1838), *E. ovalis* (Schneider, 1799), and *E. surinamensis* (Daudin, 1802) present problems related to their name-bearing types and type localities, leading to difficulties defining their specific statuses (Lavilla et al. 2003).

According to Lavilla et al. (2003), *E. bicolor* is the only species of genus *Elachistocleis* occurring in state of São Paulo. However, the species registered in the present study differs from *E. bicolor* by the spotted venter (immaculate venter in *E. bicolor*, according to Lavilla et al. 2003). Secondly, our results extend the distribution range of *Rhinella ornata*, the only species among the 21 registered here that is strictly associated with Atlantic Forest domain, according Duellman (1999), Baldissera et al. (2004), and Condez et al. (2009). *R. ornata* occurs on the coastal range of southeastern Brazil (São Paulo and Rio de Janeiro states), and in the interior of São Paulo state (Baldissera et al. 2004). The *Estação Ecológica de Jataí* can be considered as being near the limits of *R. ornata* distribution, because it is about 120 km from Franca and 100 km from Vista Alegre do Alto, the northernmost localities known for *R. ornata* in state of São Paulo (Baldissera et al. 2004). The main threat for *R. ornata* populations here seems to be the advanced fragmentation process occurring in the interior of the state of São Paulo due to increasing agricultural activities, mainly sugar cane (São Paulo 2008).

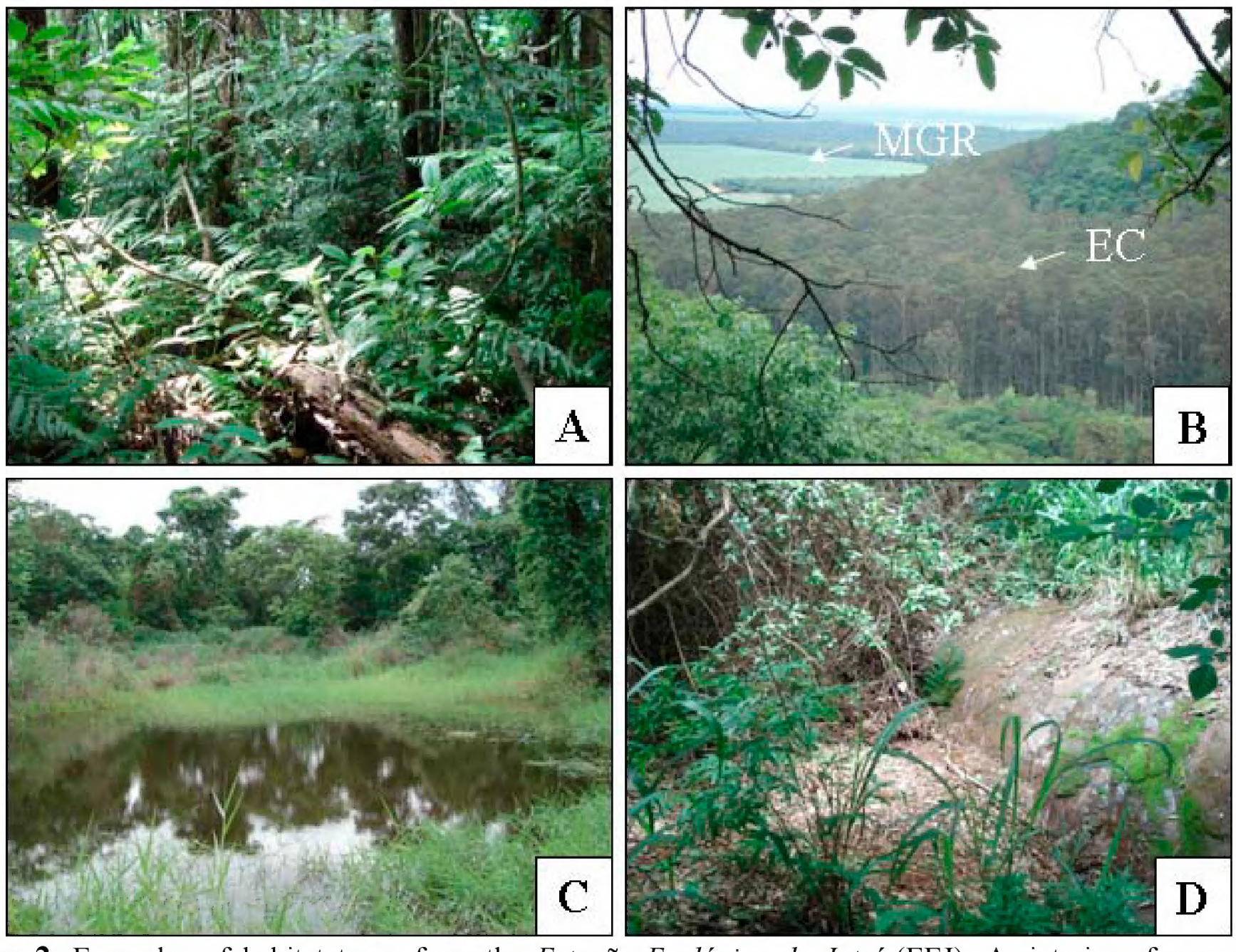

Figure 2. Examples of habitat types from the *Estação Ecológica de Jataí* (EEJ): A, interior of mesophytic semideciduous forest; B, Remnants of *Eucalyptus* sp. cultivar (EC) and the Mogi-Guaçú River (MGR); C, pond in the forest clearing; D, stream in the forest.

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Table 1. Anurans from the *Estação Ecológica de Jataí*, municipality of Luiz Antônio, state of São Paulo, Brazil. Water body types: da, dam; mp, marginal ponds of Mogi-Guaçu River; po, pond; st, stream; wl, wetland. Habitat (sensu Duellman 1999): O, open areas; F, forested areas.

Taxon	Type of water body	Habitat
Bufonidae		
Rhinella ornata (Spix, 1824)	st	F
Rhinella schneideri (Werner, 1894)	st	F/O
Hylidae		
Dendropsophus elianeae (Napoli and Caramaschi, 2000)	wl	O
Dendropsophus minutus (Peters, 1872)	po, wl	F/O
Dendropsophus nanus (Boulenger, 1889)	da, mp, po	O
Hypsiboas albopunctatus (Spix, 1824)	mp, st, wl	F/O
Hypsiboas faber (Wied-Neuwied, 1821)	po	F/O
Hypsiboas raniceps Cope, 1862	mp	F/O
Scinax fuscovarius (Lutz, 1925)	po, wl	O
Scinax similis (Cochran, 1952)	po, wl	O
Trachycephalus venulosus (Laurenti,1768)	po	F/O
Leiuperidae		
Eupemphix nattereri Steindachner, 1863	po, wl	O
Physalaemus centralis Bokermann, 1962	wl	F/O
Physalaemus cuvieri Fitzinger, 1826	mp, po, st, wl	F/O
Leptodactylidae		
Leptodactylus fuscus (Schneider, 1799)	po, st, wl	F/O
Leptodactylus labyrinthicus (Spix, 1824)	po, st, wl	F/O
Leptodactylus mystaceus (Spix, 1824)	po, st	F/O
Leptodactylus mystacinus (Burmeister, 1861)	po, wl	F/O
Leptodactylus podicipinus (Cope, 1862)	da, mp, po, st	F/O
Microhylidae		
Dermatonotus muelleri (Boettger, 1885)	po	O
Elachistocleis sp.	po, wl	O

All 21 species registered at the *Estação Ecológica de Jataí* had already been registered for other areas in or under the influence of the mesophytic semideciduous forest in the state of São Paulo. Although this survey was conducted in a very short period of time, and despite the fact that the temporal and spatial sampling efforts are not comparable, the species composition of *Estação Ecológica de Jataí* corresponds to 62 % of the anuran fauna in Mata São José, Rio Claro (24 species, Zina et al. 2007), 59 % in Nova Itapirema, Nova Aliança (27 species, Vasconcelos and Rossa-Feres 2005), 54 % in Guararapes (26 species, Bernarde and Kokubum 1999), and 54 % in the *Estação Ecológica de Caetetus*, in Gália (24 species, Bertoluci et al. 2007). All of the above are mesophytic semideciduous forest remnants in the interior of the state of São Paulo.

Knowledge of anuran faunas in areas such as savannas and mesophytic semideciduous forests is still scarce (Rossa-Feres et al. 2008). The *Estação Ecológica de Jataí* includes these two types of vegetation and is one of the biggest remnants of the mesophytic semideciduous forest in state of Sao Paulo. Our results are a contribution to the knowledge on anuran distribution in the mesophytic semideciduous forest in the state of São Paulo. Further studies shall add new species to the current list in an attempt to provide the framework necessary for conservation strategies.

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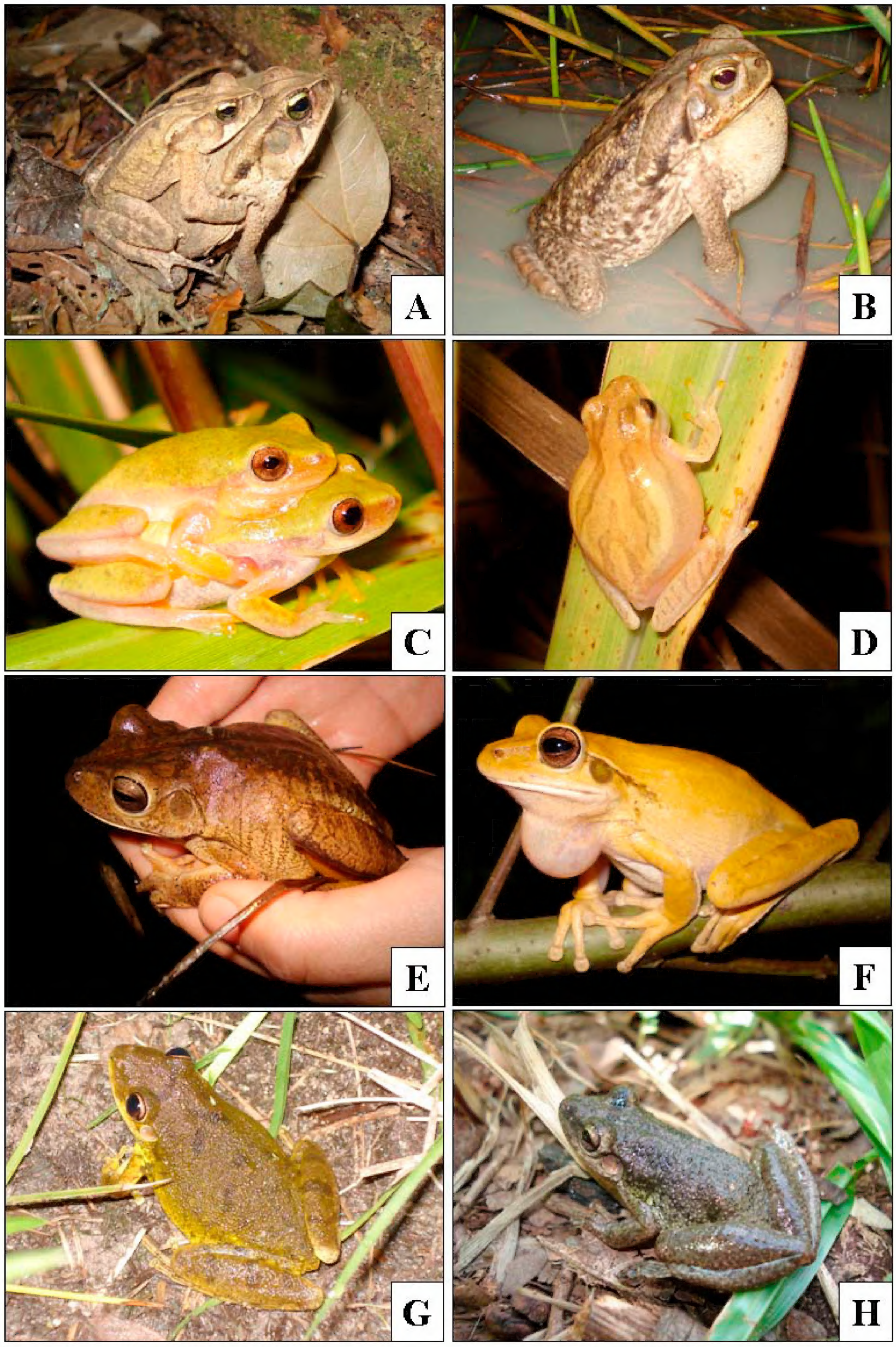

Figure 3. Pictures of anurans from the *Estação Ecológica de Jataí* (EEJ): A, *Rhinella ornata*; B, *R. schneideri*; C, *Dendropsophus elianeae*; D, *D. minutus*; E. *Hypsiboas faber*; F, *H. raniceps*; G, *Scinax fuscovarius*; H, *S. similis*.

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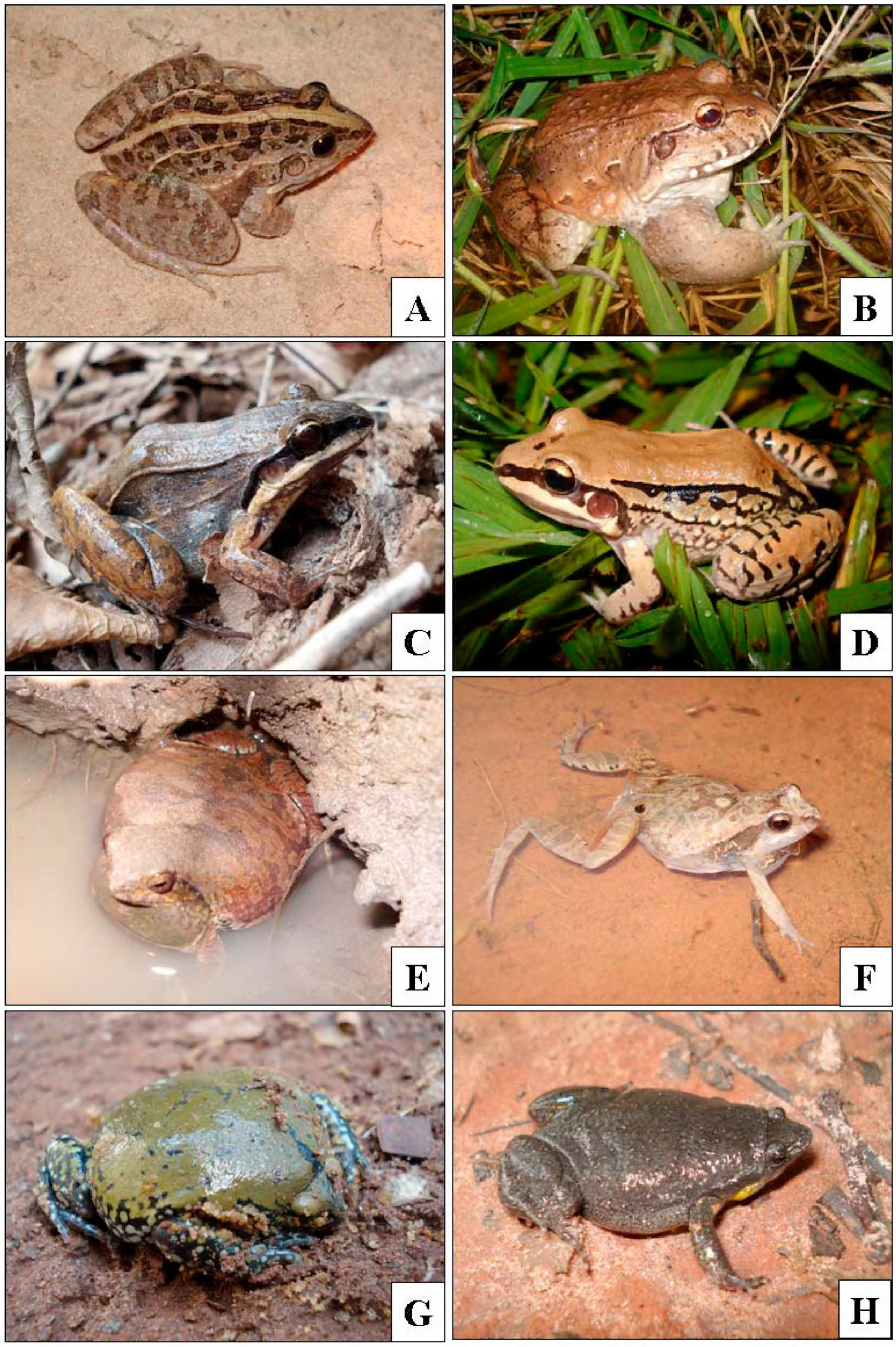

Figure 4. Pictures of anurans from the *Estação Ecológica de Jataí* (EEJ): A, *Leptodactylus fuscus*; B, *L. labyrinthicus*; C, *L. mystaceus*; D, *L. mystacinus*; E. *Eupemphix nattereri*; F, *Physalaemus cuvieri*; G, *Dermatonotus muelleri*; H, *Elachistocleis* sp.

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